User Manual
For

M1-A04 MDVR

Mobile Digital Video Recorder

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Notice

The information in this manual was current when published. The manufacturer reserves the right to revise and improve its products. All specifications are therefore subject to change without any notice.

The purpose of this manual is to kindly aid the user for the operation for our MDVR (especially for GUI setting). The user should have a basic understanding of computer operation and basic knowledge of how to connect peripherals and make some settings.

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Guarantee & Warnings

1) **Electrical Apparatus Safety**
   All installation and operation should comply with local electrical safety norms.
2) **Transportation**
   In the process of transportation, storage and installation, please avoid heavy stress, violent vibration, impact and water splashing.
3) **Installation**
   Install the equipment in accordance with the requirements, handle carefully. Do not heavily press the equipment before the MDVR installation is finished.
4) **Requirements on Engineers & Technicians**
   All the work of checking and maintenance should be done by qualified technicians and engineers. We do not undertake any responsibility caused by unauthorized modifications.
5) **Requirements on Environment**
   The equipment should be installed and stored in a cool and dry place, away from direct sunlight, flammable or explosive substances, etc. Keep gaps not less than 3cm around the device to facilitate ventilation for cooling.
6) **Accessories**
   Make sure to use accessories from the manufacturer recommended in the attachment.
   Insulate circuit ground and metal shell for all the peripherals.
   Before installation, please open the package and ensure that all parts are included.
   If there are any problems, please contact us as soon as possible.

CONTENTS

1. **PRODUCT CHARACTERISTICS** 5
1.1. OVERVIEW 5
1.2. FEATURES 5
1.3. FUNCTIONS 5
1.4. SPECIFICATIONS 6
1.5. SYSTEM DIAGRAM 7
1.6. EXTERNAL INTERFACE 8
2. **QUICK START GUIDE** 10
2.1. USER LOG IN 10
2.2. LOCAL VIDEO CHECK, PLAYBACK AND BACKUP 10
2.3. STORAGE DEVICE FORMAT 11
2.4. DUAL CARD RECORDING MODE 11
2.5. EVENT SETTING 11
2.6. SYSTEM UPGRADE 12
3. **REFERENCE APPENDIX** 13
3.1. STORAGE CAPACITY CALCULATION 13
3.2. FREQUENTLY ASKED QUESTIONS 14

1. PRODUCT CHARACTERISTICS

1.1. OVERVIEW

M1-A04 is a cost-effective equipment designed for in-car video surveillance. It has a high-speed processor and embedded operating system, combining with the the most advanced H.264 video compression / decompression technology as well as GPS positioning technology. M1-A04 allows you to use CIF, HD1 and D1 video formats to record, which can be used for data query and accident analysis. M1-A04 is easy for installing and maintenance.

1.2. FEATURES

1) Supports for 360 degree installation.
2) Allows D1, HD1 and CIF formats.
3) With abnormal power protection, prevent video loss.
4) Supports DC8-36V wide voltage input and be suitable for 12V and 24V vehicles.
5) Watermarking technology: prevents data tampering and ensure the authenticity and legal efficiency of the video
6) Dual video card: Support dual card loop recording or mirror backup recording.

1.3. FUNCTIONS

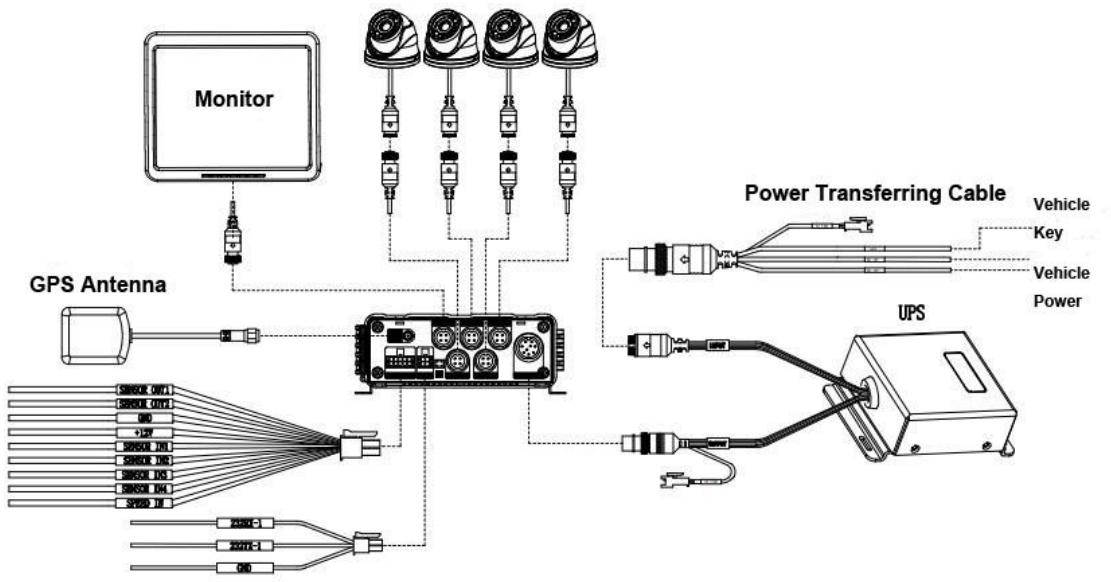
1) Local recording and playback functions: D1 / HD1 / CIF resolution optional.
2) Driving record: Supports speed, turning, brake, reverse, door opening and so on.
3) User Log: on-off status of the device, video loss, recording start time / end time, user log in / log out, change device parameters, time, GPS status.
4) Export and import configuration files: thumb drive to import / export device parameters.
5) Device upgrade: Supports local upgrade.
6) Alarm linkage: supports linkage switch value output, image display, etc.
7) Storage formatting: formatting SD cards and external USB devices.

1.4. SPECIFICATIONS

Items		Technical Index
Product Series		M1-A04
Function Overview		Live view recording, playback, network, GPS location tracking
System	OS	Linux 2.6.24
	Control Mode	IR remote control
Video	Input	4 channels (Aviation-din X4)
	Output	1 channel (Aviation-din X1)
	Total Resource	400fps CIF @ PAL / 480fps CIF @ NTSC
	Video Signal Standard	Electrical level: 1Vpp; Impedance: 75Ω NTSC/PAL Optional
Audio	Input	4 channels
	Output	1 channel
	Audio Signal Standard	Electrical level: 2Vpp; Input impedance: 9.4Ω
Display	Display Split	1/4
	OSD	GPS information, alarm, temperature, voltage, device information, software version, MCU version
	Operation Interface	Semi-transparent GUI
Recording	Video/Audio Compression	H.264/ADPCM
	Image Resolution	PAL: D1(704x576), HD1(704x288), CIF(352x288) NTSC: D1(704x480), HD1(704x240), CIF(352x240)
	Image Quality	1-8 levels adjustable (1 is the best)
	Recording Mode	Manual/Schedule/Alarm (sensor trigger, speed, acceleration, video loss, temperature)
	Post-recording	0-30minutes
Playback	Playback Channel	Supports 1 channel by local playback, 1 channel by PC software, 4 channels playback
	Search Mode	Date/time, channel, event
Locating	GPS	Location tracking, speed detection and time sync
Storage	SD card	Compliance with SDXC specification
Interface	USB	USB2.0 × 1
	RS232	RS232 × 1
	SD	SD card x 2
	Sensor	4 inputs, 2 outputs
	Speed	1 channel pulse speed detection
Power	Input	DC8-36V
	Output	500mA@12V

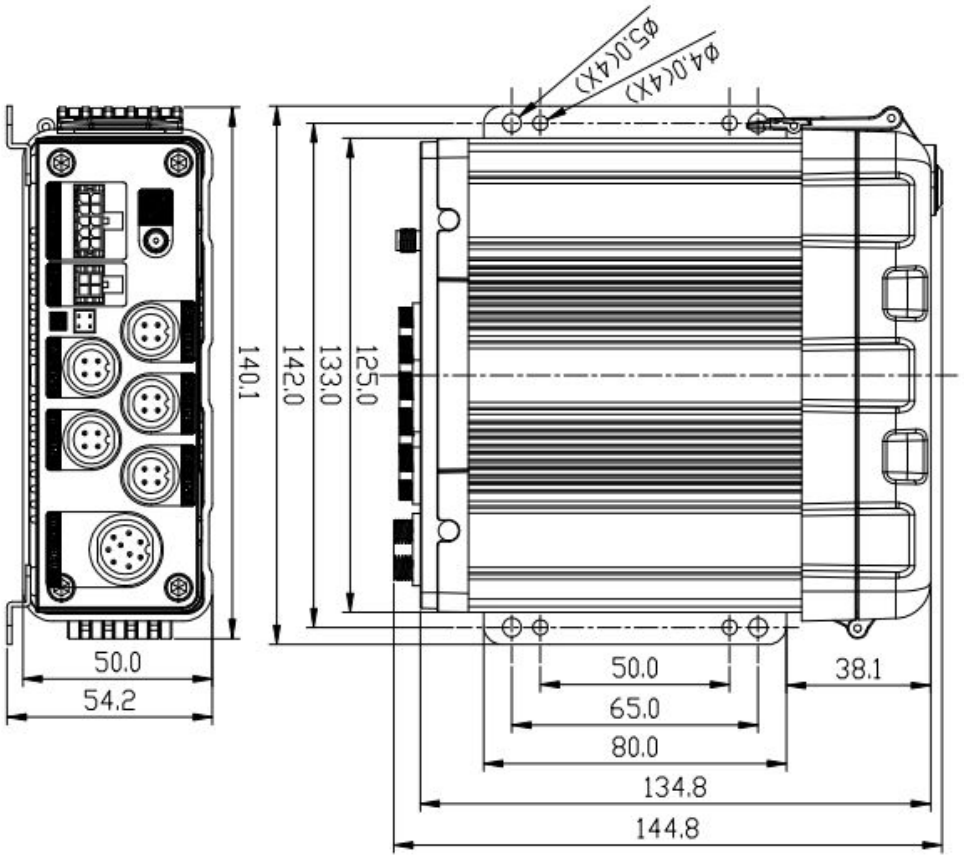
	Current	Impact current: input 13.5V@1.3A Working current: input 13.5V@1.2A, 27V@0.5A Standby current: 0A
Physical Characteristic	Dimension (L x W x H)	142*144.8*54.2mm
	Weight	0.66 Kg
Operating Environment	Temperature	-25℃- +60℃
	Relative Humidity	8%-90%
Certificates		CE，FCC，IOS7637-3

1.5. SYSTEM DIAGRAM

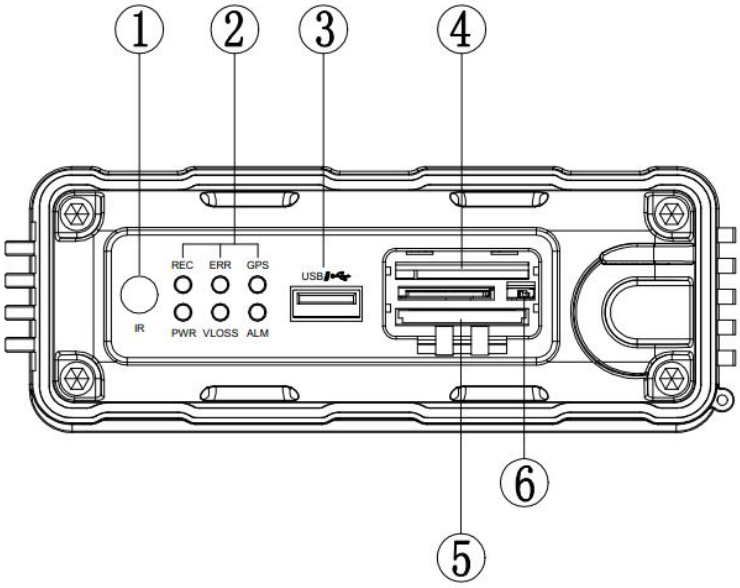


1.6. EXTERNAL INTERFACE

DIMENSION

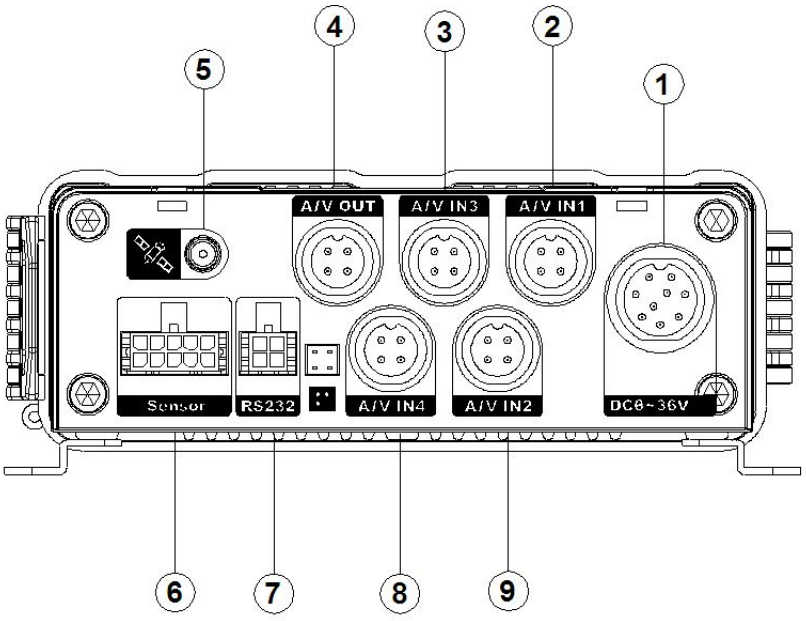


FRONT PANEL



Serial No.	Print	Description
1	IR	Remote control receiving
2	REC	Recording indicator
	ERR	Error indicator
	GPS	GPS status indicator
	PWR	Power indicator
	VLOSS	Video loss indicator
	ALM	Alarming indicator
3	USB	For upgrade, video export
4	Main card	Record fireproof box information in mirror recording
5	Vice card	Record video in mirror recording
6	Front shell mechanical switch	Shutdown for protection when the cover is openned

Rear Panel

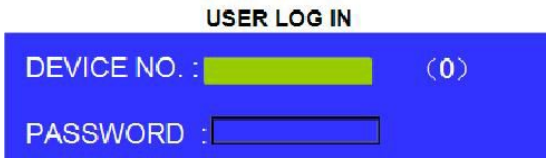


Serial No.	Print	Description
1	DC8-36V	DC IN Jack
2	AV IN1	Audio & Video Input 1
3	AV IN3	Audio & Video Input 3
4	A/V OUT	For Monitor
5		For GPS Antenna
6	SENSOR	Alarm port
7	RS232	RS232 PORT
8	AV IN4	Video/Audio input 4
	AV IN2	Video/Audio input 2

2. QUICK START GUIDE

2.1. USER LOG IN

1) After the device boots up, press LOGIN/LOCK or SETUP to enter the GUI as follow.



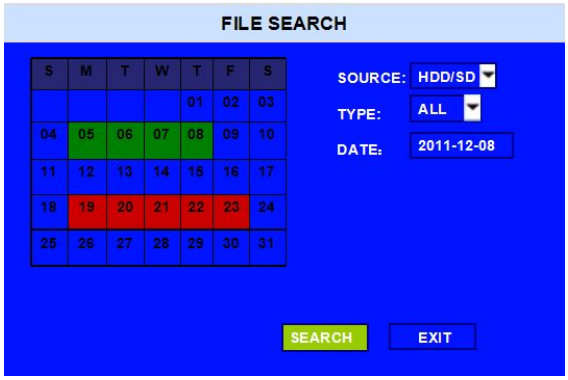
2) **ENTER DEVICE NO.**: Input the number according to the number in the bracket.

3) **ENTER PASSWORD**: Video searching and information menu checking are available if you log in with the user password while device parameters setting is possible with administrator password.

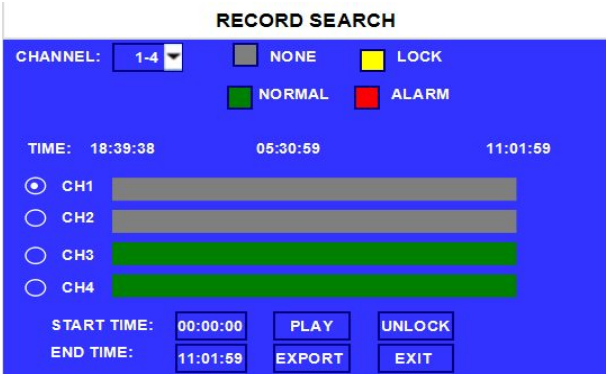
User default password is 22222222, and Admin password is 88888888.

2.2. LOCAL VIDEO CHECK, PLAYBACK AND BACKUP

1) **VIDEO CHECK**:The user can search the files according to file types, video channels, date/time and start time. The file types include All and Alarm (Green module indicates general record while red module points to alarm record.)



The search results will be shown as follows.



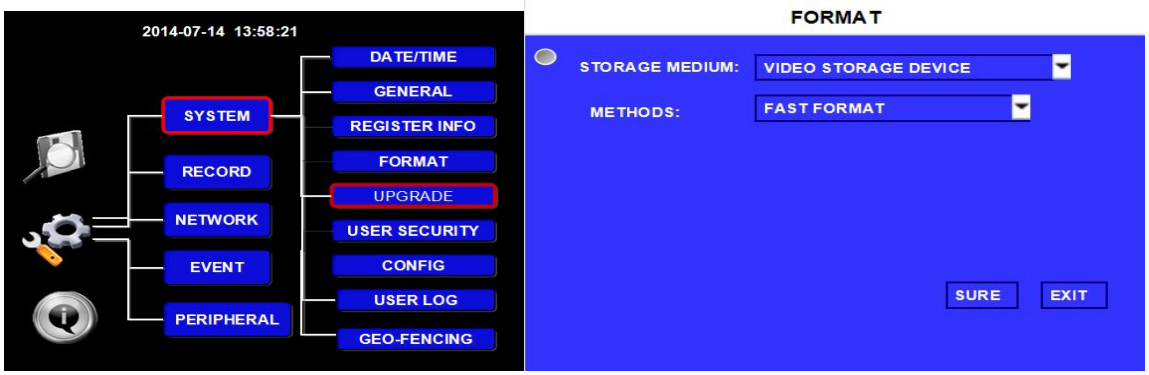
2) **VIDEO PLAYBACK**: Choose the channel and time, click ENTER to playback.

3) **VIDEO DATA EXPORT**: When there are videos available at the channel you choose, click the button and you could export all the videos during the time to the storage device connected via USB.

2.3. STORAGE DEVICE FORMAT

FORMAT: User can format both hard disk and external storage devise by entering into following path in GUI: SYSTEM>>FORMAT

⚠ Format new SD card when used at the first time.



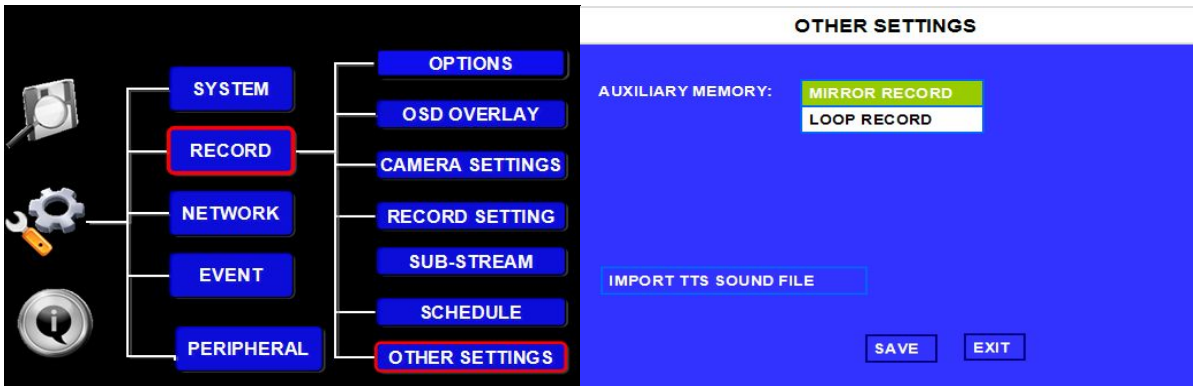
2.4. DUAL CARD RECORDING MODE

M1-A04 supports dual card loop recording and mirror recording, you can change this in RECORD >> OTHER. It will automatically format when you change the setting.

Make sure the two SD cards share the same capacity, brand and batch.

Instructions:

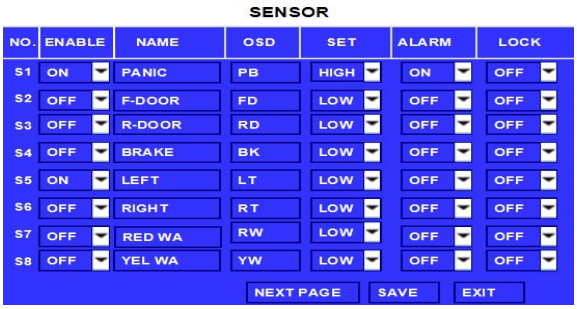
1) The device will use another SD card when current SD's space is less than 768M.
2) When both SD space is less than 3G, the device will start to cover until the remaining space is larger than 4G.
3) It will cover the earliest record when the device is covering the record.



2.5. EVENT SETTING

Remark: The event points to the record produced by the trigger signal of sensor/video loss, acceleration etc.

1) SENSOR SETTING


SENSOR
NO. ENABLE NAME OSD SET ALARM LOCK
S1 ON PANIC PB HIGH ON OFF
S2 OFF F-DOOR FD LOW OFF OFF
S3 OFF R-DOOR RD LOW OFF OFF
S4 OFF BRAKE BK LOW OFF OFF
S5 ON LEFT LT LOW OFF OFF
S6 OFF RIGHT RT LOW OFF OFF
S7 OFF RED WA RW LOW OFF OFF
S8 OFF YEL WA YW LOW OFF OFF
NEXT PAGE SAVE EXIT

EN: Off means the corresponding event just records the log instead of triggering the video. And the event information could be checked in the event file.

On means the corresponding event records log and triggers video.

NAME: User could customize the sensor name, such as open the door or reverse.

OSD: User could customize OSD. It will be embedded into the alarm video files when alarms happen.

SET: HIGH means it is effective to low level. It will trigger corresponding sensor signal when the voltage of sensor input pin is more than 3.8V.

LOW means it is effective to high level. It will trigger corresponding sensor signal when the input pin falls from the high voltage to 0V.

ALARM: Off means the trigger signal is normal event.

On means the trigger signal is alarm event.

LOCK: OFF means it will not lock video when the corresponding event is label U.

ON means the video file could be deleted after unlocking when the corresponding event is label L. (The unlock time could be set by the protect time parameter of lock file)

2) SENSOR LINKAGE RESPONSE:

FULL DISPLAY: OFF means the function is off.

ON means the corresponding video channel will have full-screen display in straight once sensor signal is triggered.

ACTIVATE 3G: OFF means the function is off.

ON means it will activate 3G module to dial and upload snapshot once sensor signal is triggered.

2.6. SYSTEM UPGRADE

1) Please create one folder named **dvrupgrade** in root directory in thumb drive and then copy the software upgrade file to this folder.
2) Insert the thumb drive after the host boots.
3) After choosing System >> Upgrade, user needs to click Upgrade and then start to upgrade it.
4) The indicator LED of front panel flashes simultaneously when upgrading, and the screen pops up **System Update**.
5) After upgrading, the device will restart automatically and pops up **System Initializing**.
6) After restarting, check whether the version is the latest one in the menu Upgrade.

3. REFERENCE APPENDIX

3.1. STORAGE CAPACITY CALCULATION

1) IMAGE QUALITY & STREAMS

	Image	1	2	3	4	5	6	7	8
Stream (Kbps)	D1	2048	1536	1230	1024	900	800	720	640
	HD1	1280	960	768	640	560	500	450	400
	CIF	800	600	480	400	350	312	280	250

2) RECORD FILE SIZE CALCULATION

Rec. file size for each channel is:

Recording time (s) x Stream (Kbps) / 8 / 1024 = File Size (MB)

e.g. The file size of the Image 1 with D1 resolution within 1 hour:

3600 x 2048 Kbps / 8 / 1024 = 900 MB

3) IMAGE QUALITY & RESOLUTION

	Image Quality	1	2	3	4	5	6	7	8
Resolution	D1	900	675	540	450	395	351	316	281
	HD1	562	422	337	281	246	219	198	176
	CIF	351	264	211	176	153	137	123	110

3.2. FREQUENTLY ASKED QUESTIONS

1) The system can't start?

Usually this problem results from the incorrect power connection. Please follow below steps to check the power connection:

1. Check the input power, whether the power wire is connected correctly, whether the ground wire is connected back to the battery, and whether the fuse on the power wire is in good condition.
2. Check whether the ACC signal wire input to the power is with voltage higher than 7 V.
3. Check whether the device key is closed.

2) The MDVR restarts uninterruptedly?

Please follow below steps to check it:

1. Check whether the voltage of MDVR is insufficient. If the voltage is less than the start-up voltage of the device, the device would always restart.
2. The problem in hard disk/SD card may cause the failure to start. Take off the storage part and check whether it is broken down.

3) The device can't record?

Usually this problem results from the storage disk or camera. Please follow below steps to check it:

1. Check whether the storage disk is installed, whether it is in good contact, and whether the disk can be read normally in computer.
2. Check whether the storage disk is formatted. The storage disk should be formatted before normally storing record files.
3. Check whether there is video signal input into the device from camera, and whether there is video/image on the screen.

4) There is no voice in record file?

Please follow below steps to check it:

1. Check whether there is an external pickup, or whether the camera features with the function of audio collection.
2. Access to Video Channel Settings, check if Audio is set on.
3. There must be video input into the channel for recording and it must record normally.

5) The GPS works abnormally?

Please follow below steps to check it:

1. Check whether the GPS antenna is installed correctly. There is a silk print logo on the GPS antenna holder behind the host device.
2. Check whether the antenna receiver is sheltered. It should not be covered by any stuff, which may cause it not to receive signals.
3. Environmental influence such as tree shades, being inside tunnel, driving near tall building or elevated roads, thunderstorms or other weather influence, etc. can also cause signal loss or receiving wrong signals.

6) The device can't shutdown in ignition switch mode?

Please follow below steps to check it:

1. Check if the ACC line connection mode is correct; and check whether there is voltage on ACC yellow line when the key is turned off.
2. If the device has been set with schedule recording, it can't shutdown if it is still during recording time of the task table.